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October 27, 2008

Ms. Stacy Froelich  
South Dakota Department of Environment and Natural Resources  
Air Quality Division  
523 East Capitol  
Pierre, SD 57501

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PROGRAM

**Subject: Basin Electric Power Cooperative NextGen Project  
PSD Permit Application – Supplemental Information**

Dear Ms. Froelich:

On behalf of Basin Electric Power Cooperative, ENSR is submitting additional materials and corrections to its PSD permit application for the Basin Electric NextGen Project near Selby, SD. The original application was filed on July 29, 2008; and we have had subsequent discussions with your agency in the meantime, including a response to comments dated September 18, 2008. This letter includes corrections and updates to supplement that original application, in order to expedite your review and issuance of a completeness determination.

Please review and accept the following clarifications and additional information as a supplement to that application.

1. Page 4-12, in the last set of six "bulleted items" on that page, we had intended to indicate that Wet Limestone Forced Oxidation (Wet LSFO) is actually a subset of Wet FGD. The first bullet should read "Wet FGD, including Wet LSFO" and then delete the next bullet which references Wet LSFO.
2. Page 4-28, Third paragraph, last sentence. Delete the word "and" immediately following the word "matter. The statement should read "Emissions are minimized based on the BACT for condensable matter precursors including SO<sub>2</sub>, ..."
3. Page 4-51 add a sentence in Section 4.3.1.2: "Enclosures control all fugitive emissions from conveyors and buildings. Emissions from enclosed sources are generally routed to baghouses or other control devices." We had intended to indicate that enclosures are a technically feasible control device for PM non-point sources.
4. Page 4-52, last paragraph. Step 4 evaluates all the controls listed above. We want to clarify that enclosures were not proposed for the coal piles or the bottom ash stackout pile. Add the phrase "but not for the coal piles or bottom ash piles" at the end of the first sentence in that paragraph.
5. Page 4-55. The title of Table 4-14 should be "Economic Impact Analysis for the Technically Feasible Coal Pile PM Control Technologies." The reference to "Ash Pile" in this title is incorrect.
6. Page 4-58. Table 4-19 Add a footnote to the table indicating that Emission Limits of 0.01 gr/dscf and > 99% removal are considered equivalent. The table listing "<99%" should be ">99%."

Ms. Stacy Froelich  
October 27, 2008  
Page 2

7. Page 4-59, the sentence at the end of Section 4.3.2.4.1.3.1, should read "Tables 4-20a and 4-20b are a summary of the economic evaluation of point source particulate control options." On page 4-60, replace that page with the attached page 4-60 that includes both Table 4-20a and 4-20b. Table 4-20b provides a cost analysis for 0.005 gr/dscf."
8. Page 4-61, also attached provides an update of the comparative evaluation of baghouse controls, under the assumption that a control level of 0.01 gr/dscf is equivalent to 99% control. A copy of that updated page is also attached as a replacement, but for clarity the following specific changes were made to that page:
  - The first two sentences at the top of the page now read "The average control cost of limiting emissions to 0.005 gr/dscf from point sources <5000 dscfm is \$179/ton. The associated incremental costs are \$3,236/ton." These data reflect the revised costs from Tables 4-20a and 4-20b.
  - The last line in the second paragraph in that page was deleted.
  - The first paragraph in Section 4.3.2.4.2 should be replaced with the following text: "The next ranked control option, for small sources, is filter systems designed to limit emissions from point sources to 0.01 gr/dscf. The environmental, energy impacts are similar to the lower emitting options. While the average control cost is \$163/ton which is still above the expected particulate control cost this control option is accepted as for reasons beyond BACT. Therefore no further review is necessary."
  - The material in Step 5, on the bottom of the page has been inserted in a revised outline. Items 1 and 2 now have subheadings a, b, and c, rather than the small Roman numeral outline. None of the text was changed as a result of this different outline.
9. Page 4-97. The text under Section 4.6.2.2.5, SNCR should be reworded. Please correct the second sentence to read "Temperatures greater than 2000°F and less than 500°F are outside the operating range for SNCR."
10. Page 4-116, Table 4-42 includes separate listings under Material Handling System Emission Points for "0.01 gr/dscf" and ">99% control." Add a footnote that "For coal handling operations an emission rate of >99% control is equivalent to 0.005 gr/dscf for baghouses greater than 5000 dscfm and 0.01 gr/dscf for baghouses less than 5000 dscfm.

As you review these items, please do not hesitate to call with any questions or clarifications. We look forward to resolving these matters with you.

Sincerely yours,



Senior Program Manager

cc: Cris Miller, Basin Electric  
Greg Knauer, Burns & McDonnell

REF: 02450-017

Attachment

Table 4-20a Economic Impact Analysis for the Technically Feasible Point Source (<5,000 dscfm) Control Technologies

CONTROL ALTERNATIVE	POTENTIAL COMB. CONC.	CONTROL EFFICIENCY	CONTROLLED EMISSION RATE	REDUCTION, tons per year		CONTROL TECHNOLOGY COSTS (\$1000's)			COST EFFECTIVENESS, \$ per ton			
				Tons/ year	%	Tons/ year	Incr- mental	Capital	Annual O&M	Total Annual	Average	Incr- mental
0.005 gr/dscf	111.7	99.50	0.6			111.1	0.6	110	7	20	179	3,236
0.01 gr/dscf	111.7	99.00	1.1			110.6	110.6	100	7	18	163	163
Baseline (Uncontrolled)	111.7											

Footnotes

- Analysis uses average uncontrolled emission rate from point sources with a design of 5,000 dscfm or less.
- Assumes 0.01 gr/dscf is equivalent to a control rate of 99%.
- Analysis performed using standard techniques following EPA guidelines and policies.
- Evaluation is based on one source that is the average size of all sources <5000 dscfm

Assumptions

Life, years	30	Insurance	0.2%
Cost of Money, %	6	O & M Levelization Factor	1.36525
Capital Recovery Factor	0.07265	Escalation, %	3.0

Table 4-20b Economic Impact Analysis for the Technically Feasible Point Source (>5,000 dscfm) Control Technologies

Economic Impact Analysis for Use Technically Feasible Point Source (>5,000 dscfm) Control Technologies												
CONTROL ALTERNATIVE	POTENTIAL COMB. CONC.	CONTROL EFFICIENCY	CONTROLLED EMISSION RATE	REDUCTION, tons per year		CONTROL TECHNOLOGY COSTS (\$1000's)			COST EFFECTIVENESS \$ per ton			
				Tons/ year	%	Average	Incr- mental	Capital	Annual O&M	Total Annual	Average	Incr- mental
0.005 gr/dscf	1,253	99.50	6.27			1,247.1	6.3	275	19	50	40	721
0.01 gr/dscf	1,253	99.00	12.53			1,240.8	1,240.8	250	17	45	36	36
Baseline (Uncontrolled)	1,253											

Footnotes

- Analysis uses average uncontrolled emission rate from point sources with a design of 5,000 dscfm or greater.
- Assumes 0.01 gr/dscf is equivalent to a control rate of 99%.
- Analysis performed using standard techniques following EPA guidelines and policies.
- Evaluation is based on one source that is the average size of all sources >5000 dscfm

Assumptions

Life, years	30	Insurance	0.2%
Cost of Money, %	6	O & M Levelization Factor	1.36525
Capital Recovery Factor	0.07265	Escalation, %	3.0

The average control cost of limiting emissions to 0.005 gr/dscf from point sources <5000 dscfm is \$179/ton. The associated incremental costs are \$3,236/ton. The cost for a small source bin vent filter or FF is significantly above the expected particulate control cost of \$100/ton or less. However, the cost for a large source bin vent filter or FF is only a fraction of this cost. Due to the low cost per ton of a bin vent filter or baghouse achieving 0.005 gr/dscf on these large sources, a bin vent or FF achieving 0.005 gr/dscf is considered the BACT for control of point source emissions from large source materials handling. However, these costs are not considered cost effective on smaller point source emissions and are rejected as BACT in this analysis.

In summary, point sources that are greater than 5,000 dscfm in size will utilize a bin vent or FF and control point source materials handling emissions to 0.005 gr/dscf. Point sources that are smaller than 5,000 dscfm in size may use a bin vent filter or FF but control to 0.005 gr/dscf is excessively expensive and is not considered BACT.

#### **4.3.2.4.2 Next Ranked Control (Bin Vents and Baghouses)**

The next ranked control option, for small sources, is filter systems designed to limit emissions from point sources to 0.01 gr/dscf. The environmental, energy impacts are similar to the lower emitting options. While the average control cost is \$163/ton which is still above the expected particulate control cost this control option is accepted as for reasons beyond BACT. Therefore no further review is necessary.

#### **4.3.1.10 STEP 5. Proposed PM BACT Determination for Point Source Materials Handling**

To demonstrate compliance, NextGen proposes the following point source PM emission limits and compliance standards for materials handling:

- 1) Filter systems (FFs or bin vent filters) designed for 5,000 dscf or larger shall be designed and guaranteed to limit emissions to 0.005 gr/dscf; expressed as the average of 3-Method 5 or 5D test runs. Initial stack testing at representative FFs shall be utilized to demonstrate all FFs are in compliance.
  - a. The initial stack test shall occur on the FFs as selected with the future proposed compliance testing protocol.
  - b. No initial testing is proposed for bin vent filters since it is not feasible to measure emissions from these sources. Bin vent filters must be designed and guaranteed to maintain the 0.005 gr/dscf.
  - c. All replacement parts must be of similar or better quality than the original to maintain the 0.005 gr/dscf limit.
- 2) Filter systems (FFs or vent filters) designed for gas flows smaller than 5,000 dscf shall be designed and guaranteed to limit emissions to 0.01 gr/dscf; expressed as the average of 3-Method 5 or 5D test runs. Initial stack testing at representative FFs shall be utilized to demonstrate all FFs are in compliance.
  - a. The initial stack test shall occur on the FFs as selected with the future proposed compliance testing protocol.
  - b. No initial testing is proposed for bin vent filters since it is not feasible to measure emissions from these sources. Bin vent filters must be designed and guaranteed to maintain the 0.01 gr/dscf.
  - c. All replacement parts must be of similar or better quality than the original to maintain the 0.01 gr/dscf limit.

**Froelich, Stacy**

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**From:** Macdonald, Bruce [Bruce.Macdonald@aecom.com]  
**Sent:** Monday, October 27, 2008 5:25 PM  
**To:** Froelich, Stacy  
**Cc:** Rombough, Kyrik; Cris Miller; Knauer, Greg  
**Subject:** Addendum to PSD Permit Application

Ms. Froelich,

As we discussed last week, ENSR is submitting an addendum to the PSD permit application for Basin Electric's NextGen project near Selby, South Dakota. This addendum includes some corrections and updates to the application that was submitted on July 29, 2008.

Attached is a letter and attachment to that letter identifying and explaining the changes. We are sending a paper copy via Federal Express for delivery tomorrow, October 28. As you review these items, do not hesitate to call with any questions.

We look forward to resolving these matters as expeditiously as possible.

Regards

Bruce

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As of October 6, 2008, my e-mail address has changed to [bruce.macdonald@aecom.com](mailto:bruce.macdonald@aecom.com)

Please make that change in your address book.

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**Bruce C. Macdonald, Ph.D.**

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